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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,187	09/12/2003	X. Long Dai	068062.0166	8281
31625 7590 04/30/2008 BAKER BOTTS L.L.P. PATENT DEPARTMENT 98 SAN JACINTO BLVD., SUITE 1500 AUSTIN, TX 78701-4039			EXAMINER PATEL, JAYESH A	
			ART UNIT	PAPER NUMBER
			2624	
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			04/30/2008 PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/661,187

**Applicant(s)**

DAI ET AL.

**Examiner**

JAYESH A. PATEL

**Art Unit**

2624

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 1-12 and 21-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 13-20 and 34-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Paper No(s)/Mail Date \_\_\_\_\_
- 6) ☐ Other: \_\_\_\_\_

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/21/2008 has been entered.

***Response to Arguments***

2. Applicant's arguments filed 03/21/2008 have been fully considered but they are not persuasive. The reasons are explained below. The Office action 09/27/2007 does not say that the Claims 1-12 and 21-33 have been cancelled. Instead it recites on Page 2 that the Claims 1-12 and 21-33 are withdrawn from consideration.

The applicant argues on page 13 that "there is no motivation, teaching or suggestion in the cited references to combine the references". The examiner disagrees. The applicant argues that neither Evans or Sharnoff or combination does not disclose "a method of registering holographic images". The examiner disagrees. Evans discloses at **(Col 2 Line 63, Col 3 Line 11)** that the images are aligned **(which is registering images)**. Evans talks in the background **(analogous art and field of endeavor)** the use of holograms in the inspection device at **(Col 1 Lines 57-67 and Col 2 Lines 26-27)** and is silent and does not

recite the word **“Holograms or Holographic images”** in the body. Evans further discloses at **(Col 9 Lines 63-67 and Col 10 Lines 1-15)** what the two images are. Also Sharnoff discloses the comparing **(difference)** two Holographic images at **(Col 2 Lines 37-52, Col 4 Lines 1-46 and Col 8 Lines 17-29)**. Evans and Sharnoff are combinable because they are analogous art **(image processing)** and are from the same field of endeavor **(comparing two images)**. Sharnoff further discloses that the inspection system as disclosed provides speedy and affordable comparative analysis at **(Col 1Line 21-23)**, therefore it would be obvious for one of ordinary skill in the art to compare two holographic images (fast and affordable) as taught by Sharnoff in the inspection method and apparatus of Evans for the above reasons.

The applicant further argues on page 13 that Evans and Sharnoff do not disclose “separately performing a sideband extraction on the resulting first holographic and second holographic images”, the examiner disagrees. Evans at Steps 8,8' Fig 1 discloses removing the harmonics **(repeating patterns are extracted of the high frequencies as seen in Fig 2 (sideband or a band of frequencies) at Col 10 Lines 25-52)**. The applicant further argues on page 13 that Evans and Sharnoff do not disclose “calculating separately performing a sideband extraction on the resulting first holographic and second holographic images”, the examiner disagrees, as the calculating is not claimed.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13-20, 34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evans et al. (US 553769) hereafter Evans in view of Sharnoff (US 4725142) hereafter Sharnoff.

Regarding Claim 13, Evans discloses a method for registering images (**Fig 1 and Col 2 Lines 57-67 and Col 3 Lines 1-3**) comprising: providing a first image (**FOV 1**) and a second corresponding image (**FOV 2**); separately transforming the first image and the second image using a Fourier transform (**Element 6,6' and Col 10 Lines 17-18**); separately performing a sideband extraction operation on the resulting first image and the second image (**Element 8,8' and Col 10 Lines 25-52 where repeating patterns of the high frequencies are extracted as seen in Fig 2 (sideband or a band of frequencies)**); separately filtering the

resulting the first image and the second image using a bandpass filter (**Element 9,9' and Col 10 Lines 45-52 where Low and High frequencies are removed which is band pass filtering**); calculating a coherence function of the resulting first image and the second image at (**Col 7 Lines 59-67**); transforming the coherence function (spectrum) using an inverse Fourier transform (**Elements 10,10' and Col 13 Lines 41-45**); performing a magnitude operation on the resulting transformed coherence function (**Element 12,12' and Col 14 Lines 26-30**); calculating a confidence value based on the magnitude operation at (**Col 20 Lines 53-55, Col 21 Lines 39-41 and 44-50**) and determining the acceptability of the correspondence between the first image and the second image based upon the confidence value at (**Col 21 Lines 39-41 and 44-50**) that the differences (**correspondence**) between the two images are determined. Evans further discloses at (**Col 11 lines 19-24 and Col 20 Lines 57-67**) that the correlation surface is achieved between the two images.

Evans does not explicitly recites the image1 and image 2 being Holographic images in the body, however at (**Col 1 Lines 57-67 and Col 2 Lines 1-30**) Evans discloses the images are holograms and the images are digitized for further processing. The (**FOV1**) and (**FOV2**) can be holograms and can be compared for inspecting the differences. This is shown as below. Evans and Sharnoff are combinable because they are analogous art (**image processing**) and are from the same field of endeavor (**comparing two images**)

Sharnoff discloses the method and system for comparing two holographic images at **(Col 2 Lines 28-52, Col 4 Lines 1-46 and Col 8 Lines 36-43)**.

Sharnoff discloses that the inspection method as disclosed is optionally, dependent on a preselected radiation phase, or amplitude or a wide choice of combined phase and amplitude simultaneously. In this way a repetitive and affordable inspection method is made at **(Col 1 Lines 16-24)**. Sharnoff further discloses that the inspection system as disclosed provides speedy and affordable comparative analysis at **(Col 1 Line 21-23)**. Imaging system and method as disclosed by Evans can be used with holograms as well and the hybrid technique as disclosed by Evans is a method of finding defects on digitized device images using a combination of spatial and frequency domain techniques at **(Col 2 Lines 57-60)**. Both Evans and Sharnoff are from the same field of endeavor and are analogous art, therefore it would be obvious for one of ordinary skill in the art at the time the invention was made, to use the system and method of comparing two holographic images as disclosed by Sharnoff and digitally processing them as taught by Evans for the above reasons.

Regarding Claim 14, Evans and Sharnoff disclose the method of claim 13 further comprising providing the first holographic image and the second holographic image using a digital holographic imaging system in **(Fig 1, and 3 Evans)** and **(Fig 7 Sharnoff)**.

Regarding Claim 15, Evans and Sharnoff disclose the method of claim 13. Evans further disclose wherein calculating the confidence value utilizes at least one identified coherent peak in **(Fig 1 Element 20 and Col 11 Lines 24-31)**.

Regarding Claim 16, Evans and Sharnoff discloses the method of claim 13. Evans further discloses wherein calculating the confidence value further comprises determining the difference in strength between a first coherent peak and a second peak at **(Figs 1,2 and Col 11 Lines 24-31)**. The offset in the peaks represents the difference.

Regarding Claim 17, see the explanation of Claim 13. Evan also discloses the conjugation in **(Fig 1, Col 11 Lines 21-24 and Col 20 Lines 57-61)**.

Regarding Claim 18, see the explanation of Claim 14.

Regarding Claim 19, see the explanation of Claim 15.

Regarding Claim 20, see the explanation of Claim 16.

Regarding Claim 34, see the explanation of Claim 13 and **(Fig 1 Elements 12,12' for threshold operation)**.

Regarding Claim 36, see the explanation of Claim 17 and 13.

4. Claims 35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evans in view of Sharnoff and in further view of Stone et al. (US 6628845) hereafter Stone.



Regarding Claim 35, Evans and Sharnoff discloses the method of Claim 13. Evans and Sharnoff however do not disclose a method further comprising performing an integer translation and subpixel modeling operation on the resulting magnitude image.

Stone discloses a method for subpixel registration and integer translation of images at **(Col 5 Lines 44-54)**. Stone also discloses that the sensitivity due to mis-registration is very large which places the requirement on registration that it be done to subpixel precision at **(Col 1 Lines 34-36)**. Stone also discloses that the method performed is computationally efficient at **(Col 5 Lines 54-55)**. Evans, Sharnoff and Stone are from the same field of endeavor, therefore it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used the teachings of Stone in the inspection methods of Evans and Sharnoff for the above reasons.

Regarding Claim 37, Evans and Sharnoff discloses the method of Claim 17. Evans and Sharnoff however do not disclose a method further comprising performing an integer translation and subpixel modeling operation on the resulting magnitude image.

Stone discloses a method for subpixel registration and integer translation of images at **(Col 5 Lines 44-54)**. Stone also discloses that the sensitivity due to

mis-registration is very large which places the requirement on registration that it be done to subpixel precision at **(Col 1 Lines 34-36)**. Stone also discloses that the method performed is computationally efficient at **(Col 5 Lines 54-55)**. Evans, Sharnoff and Stone are from the same field of endeavor, therefore it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used the teachings of Stone in the inspection methods of Evans and Sharnoff for the above reasons.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAYESH A. PATEL whose telephone number is (571)270-1227. The examiner can normally be reached on M-F 7.00am to 4.30 pm (5-4-9). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2624

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

04/22/08

/Jayesh A Patel/

Examiner, Art Unit 2624

**/YOSEF KASSA/****Primary Examiner, Art Unit 2624**